PRODUCT SPECIFICATION

PRODUCT: CERAMIC DISC CAPACITOR

TYPE: 50V, 100V, 500V, 1KV, 2KV, TEMPERATURE COMPENSATING CAPACITOR

CUSTOMER: _____

DOC. NO.: D08-00-E-06

Ver.: 6

APPROVED BY CUSTOMER

POE INTERNATIONAL CORPORATION
11F, NO. 480, RUEIGUANG RD., NEIHU CHIU
TAIPEI, 114 TAIWAN, R.O.C.

POE

1. SCOPE: THIS SPECIFICATION APPLIES TO TEMPERATURE COMPENSATING CERAMIC DISC CAPACITOR.
2. TEST CONDITIONS :

   UNLESS OTHERWISE SPECIFIED, ALL TESTS SHALL BE OPERATED AT THE STANDARD TEST CONDITIONS OF TEMPERATURE 5℃ TO 35℃ AND RELATIVE HUMIDITY 45% TO 85%. WHEN FAILS A TEST, RETEST BE OPERATED AT THE CONDITIONS OF TEMPERATURE 25℃ ± 2℃, RELATIVE HUMIDITY OF 60% TO 70% AND BAROMETRIC PRESSURE 860 TO 1060 MBAR.
3. HANDLE PROCEDURE : TO AVOID UNEXPECT TESTING RESULTS FROM OCCURRING, THE TESTED CAPACITOR MUST BE KEPT AT ROOM TEMPERATURE FOR AT LEAST 30 MINUTES AND COMPLETELY DISCHARGED.
4. TEST ITEMS :

ITEM	POST-TEST REQUIREMENTS		TESTING PROCEDURE
APPEARANCE STRUCTURE SIZE	NO ABNORMALITIES		AS SECTION 5.
MARKING			AS STATED IN SECTION 5
WITHSTAND VOLTAGE	BETWEEN TERMINALS: NO ABNORMALITIES		A. BELOW 1KV: 300% RATED VOLTAGE WITH 50mA MAX. CHARGING CURRENT FOR 1 5 SEC. B. 1KV & ABOVE: 200% RATED VOLTAGE WITH 50mA MAX. CHARGING CURRENT FOR 1 5 SEC.
	BETWEEN TERMINAL AND ENCLOSURE : NO ABNORMALITIES		SMALL METALLIC BALLS WITH 1mm DIAMETERS SHALL BE PUT ON A VESSEL AND THE TEST CAPACITOR SHALL BE SUBMERGED EXCEPT 2mm FROM THE TOP OF ITS COMPONENT BODY. THE TEST VOLTAGE SHALL BE APPLIED BETWEEN THE SHORT-CIRCUITED TERMINALS AND THE METALLIC BALLS. (APPLY 1.3KV DC OF RATED VOLTAGE BETWEEN TERMINALS AND ENCLOSURE FOR 1 5 SEC)
INSULATION RESISTANCE	10000 MΩ MIN		INSULATION RESISTANCE SHALL BE MEASURED AT 60±5 SECONDS AFTER APPLIED VOLTAGE (RATED) RATED VOLTAGE: 50V=50V, 100V=100V, 500V & ABOVE=500V
CAPACITANCE	TOLERANCE : C : ±0.25PF D : ±0.50PF J : ±5% K : ±10%		TESTING FREQUENCY : 1 MHZ ± 20% TESTING VOLTAGE : 1.0 VRMS
TEMPERATURE RANGE	-25℃ +85℃		
Q FACTOR	30 PF & ABOVE	C U & SL Q ≧1000	AS ABOVE STIPULATION OF CAPACITANCE
	BELOW 30PF	Q ≧ 400+20×C	

ITEM	POST-TEST REQUIREMENTS	TESTING PROCEDURE
TEMPERATURE CHARACTERISTIC	TEMPERATURE COEFFICIENT : CH : 0±60 PPM/℃ PH : -150±60 PPM/℃ RH : -220±60 PPM/℃ SH : -330±60 PPM/℃ UJ : -750±120 PPM/℃ SL :+350 -1000 PPM/℃ FOR (+20℃~+85℃)	ACCORDING TO STEP 1 TO 5 IN ORDER, MEASURED CAPACITANCE WHEN TEMPERATURE REACH BALANCE AND TEMPERATURE COEFFICIENT SHALL BE CALCULATED ON THE FOLLOWING FORMULA : PPM/℃ =(C2-C1)×10E6/C1(T2-T1) STEP 1,3,5 : 25℃ STEP 2 : -25℃ (SL : 20℃) STEP 4 : 85℃ NOTE : C1 = CAPACITANCE AS STEP 3 C2 = CAPACITANCE AS STEP 2 OR 4 T1 = TEMPERATURE AS STEP 3 T2 = TEMPERATURE AS STEP 2 OR 4
	CAPACITANCE TOLERANCE : WITHIN ±0.2% OR ±0.05PF, WHICHEVER IS LARGE	ACCORDING TO ABOVE STEP 1,3 & 5, CAPACITANCE TOLERANCE SHALL BE CALCULATED ON THE FOLLOWING FORMULA : △C%=(G - S)/C1 NOTE : G = GREATEST CAPACITANCE AS TESTING RESULT OF STEP 1,3 & 5 S = LEAST CAPACITANCE AS TESTING RESULT OF STEP 1,3 & 5 C1 = CAPACITANCE AS STEP 3
TERMINAL STRENGTH	TENSIBLE STRENGTH : NO BREAKDOWN	WIRE DIA.0.5 M/M. LOADING WEIGHT 0.5 KGS, FOR 10±1 SECONDS. WIRE DIA.0.6 M/M. LOADING WEIGHT 1.0 KGS, FOR 10±1 SECONDS.
	BENDING STRENGTH : NO BREAKDOWN	WIRE DIA.0.5 mm, LOADING WEIGHT 0.25 KGS. WIRE DIA.0.6 mm, LOADING WEIGHT 0.5 KGS. (BENDING BACK AND FORTH 90 DEGREE TWICE)
SOLDERING HEAT RESISTANCE	APPEARANCE : NO ABNORMALITIES	LEAD WIRE OR TERMINALS SHALL BE IMMERSED UP TO 2.0 M/M FORM BODY. (A) BODY DIA.≦5.0mm: INTO THE MOLTEN SOLDER OF WHICH TEMPERATURE: 260(+5/-0)℃ FOR 3.0±0.5 SECONDS. (B) BODY DIA.＞5.0mm: INTO THE MOLTEN SOLDER OF WHICH TEMPERATURE 260(+5/-0)℃ FOR 5~10 SECONDS. THEN LEAVE AT STANDARD TEST CONDITIONS FOR 1~2 HOURS, THEN MEASURED. ※WHEN SOLDERING CAPACITOR WITH A SOLDERING IRON, IT SHOULD BE PERFORMED IN FOLLOWING CONDITIONS. TEMPERATURE OF IRON-TIP: 350~400 ℃ SOLDERING IRON WATTAGE : 50W MAX. SOLDERING TIME : 3.5 SEC. MAX.
	CAP.CHANGE : WITHIN ±2.5% OR ±0.25PF, WHICHEVER IS LARGE.	
	WITHSTAND VOLTAGE : (BETWEEN TERMINALS) NO ABNORMALITIES	
SOLDERABILITY	LEAD WIRE SHALL BE SOLDERED OVER 75% OF THE CIRCUMFERENTIAL DIRECTION.	TO COMPLY WITH JIS-C-5102 8.4 SOLDER TEMPERATURE255(+5/-0)℃ AND DIPPING TIME 2±0.5 SECONDS FLUX : WEIGHT RATIO OF ROSIN 25%

ITEM	POST-TEST REQUIREMENTS	TESTING PROCEDURE
HUMIDITY CHARACTERISTIC	APPEARANCE : NO ABNORMALITIES	CAPACITORS SHALL BE SUBJECTED TO A RELATIVE HUMIDITY OF 90 95% AT 40 ± 2℃ FOR 500(+24/-0) HOURS, THEN DRIED FOR 1 2 HOURS AND MEASURED.
	CAP. CHANGE : C U & SL : WITHIN ±5% OR ±0.5PF, WHICHEVER IS LARGE	
	Q FACTOR : C U & SL : LESS THAN 10PF ==> Q ≧ 200 + 10 × C MORE THAN 10PF AND LESS THAN 30PF => Q ≧ 275 + 5 × C / 2 MORE THAN 30PF => Q ≧ 350	
	INSULATION RESISTANCE : 1000MΩ MIN.	
HUMIDITY LOADING	APPEARANCE : NO ABNORMALITIES	CAPACITORS SHALL BE SUBJECTED TO A RELATIVE HUMIDITY OF 90 95% AT 40±2℃ FOR 500(+24/-0) HOURS WITH RATED VOLTAGE APPLIED (LESS THAN 50mA), THAN DRIED FOR 1 2 HOURS AND MEASURED.
	CAP.CHANGE : C U & SL : WITHIN ±7.5% OR ±0.75PF, WHICHEVER IS LARGE	
	Q FACTOR : C U & SL : LESS THAN 30PF => Q ≧ 100 + 10 × C / 3 MORE THAN 30PF => Q ≧ 200	
	INSULATION RESISTANCE : 500MΩ MIN.	
HIGH TEMPERATURE LOADING	APPEARANCE : NO ABNORMALITIES	CAPACITORS SHALL BE SUBJECTED TO A TEST OF: (A) BELOW 1KV: 200% RATED VOLTAGE WITH 50mA MAX. (B) 1KV & ABOVE: 150% RATED VOLTAGE WITH 50mA MAX. FOR 1000(+48/-0) HOURS AT 85℃ ± 2℃ (FOR C U & SL) AND THEN DRIED FOR 1 2 HOURS AND MEASURED.
	CAP. CHANGE : C U & SL : WITHIN ±3% OR ±0.3PF, WHICHEVER IS LARGE	
	Q FACTOR : C U & SL : LESS THAN 10PF => Q ≧ 200 + 10 × C MORE THAN 10PF & LESS THAN 30PF => Q ≧ 275 + 5 × C / 2 MORE THAN 30PF => Q ≧ 350	
	INSULATION RESISTANCE : 1000MΩ MIN.	

5. Cap, Value vs. Rate voltage, product diameter & marking list:

Manufacturing capacity list

Cap. Value vs. Rate voltage, product diameter & type

Photo:

T.C	CH (CLASS Ⅰ, Temperature:-25℃~+85℃, T.C.C.: 0±60ppm)																			
Rate voltage	50V & 100V								500V					1KV					2KV	
Dφ	040	050	060	070	080	100	110	120	040	050	060	080	100	050	060	070	080	100	060	080
D max. (mm)	4.5	5.5	6.5	7.5	8.5	10.5	11.5	12.5	4.5	5.5	6.5	8.5	10.5	6.0	7.0	8.0	9.0	11.0	7.5	9.5
T max. (mm)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5
0.5	0R5								0R5											
1																				
2																				
3																				
4																			040	
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6																				
7									070											
8										080					080					
10																				
12										120					120					
15									150					150						
18																				
20									200											
22										220				220					220	
24															240					240
27																				
33	330														330					
36		360								360						360				
39											390									
47																				470
51																				
56		560									560					560				
62			620									620					620			
68																				
75			750														750			
82				820														820		
100				101								101						101		
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750																				
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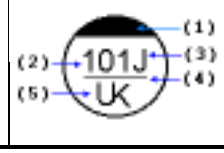
1000																				
Packing	T or B						B		T or B					T or B					T or B	
Coating	PHENOL																		EPOXY	

Marking	1. Temperature characteristic	2. Nominal capacitance	3. Capacitance tolerance		4. Rated voltage		5. Manufacturer's identification
	CH：No marking, but recognized by black color presented on the top of product.	Identified by 3-figure code. Ex. 5pF→"5" 100 pF→"101"	±5%	J	50V	Marked as underline	Shall be marked as "UK", but Dφ=6.0 mm and less in Dia shall be omitted.
			±0.25pF	C	500V	No marking (is space.)	
			±0.5pF	D	1000V	Marked "1kV"	
					2000V	Marked "2kV"	

Manufacturing capacity list

Cap. Value vs. Rate voltage, product diameter & type

Photo:

T.C	SL (CLASS Ⅰ, Temperature:+20℃~+85℃, T.C.C.: +350 ~ -1000ppm)																				
Rate voltage	50V							500V						1KV			2KV				
Dϕ	040	050	060	070	080	090	100	040	050	060	070	090	100	050	060	100	060	070	080	100	120
D max. (mm)	4.5	5.5	6.5	7.5	8.5	9.5	10.5	4.5	5.5	6.5	7.5	9.5	10.5	6.0	7.0	11.0	7.5	8.5	9.5	11.5	13.5
T max. (mm)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
0.5																					
1																					
2																					
3																					
4																					
5																					
6																					
7																					
8	080							080													
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15																	150				
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56								560						560							
68									680						680						
75																					
82																	820				
100	101								101						101			101			
120		121								121						121			121		
150		151								151									151		
180			181								181									181	
200																					
220			221								221					221					
240				241								241									
270																				271	
300																					301
330				331								331									331
360					361								361								
390													391								
470					471																
500						501															
510																					
560						561															
680							681														
750																					
820							821														
1000																					
Packing	T or B							T or B						T or B			T or B				B
Coating	PHENOL																EPOXY				

Marking	1. Temperature characteristic	2. Nominal capacitance	3. Capacitance tolerance		4. Rated voltage		5. Manufacturer's identification
	SL：No marking.	Identified by 3-figure code. Ex. 5pF→"5" 100 pF→"101"	±5%	J	50V	Marked as underline	Shall be marked as "UK", but Dϕ=6.0 mm and less in Dia shall be omitted.
			±0.25pF	C	500V	No marking (is space.)	
			±0.5pF	D	1000V	Marked "1kV"	
					2000V	Marked "2kV"	

Manufacturing capacity list

Cap. Value vs. Rate voltage, product diameter & type

Photo:

T.C	UJ (CLASS Ⅰ, Temperature:-25℃~+85℃, T.C.C.: -750±120ppm)									RH(CLASS Ⅰ, Temperature:-25℃~+85℃, T.C.C.: -220±60ppm)				
Rate voltage	50V & 100V					500V				50V & 100V				
Dφ(Code)	050	060	070	080	100	050	060	080	100	050	060	070	080	100
D max. (mm)	5.5	6.5	7.5	8.5	10.5	5.5	6.5	9.0	11.0	5.5	6.5	7.5	8.5	10.5
T max. (mm)	3.5	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5
0.5														
1														
2														

Manufacturing capacity list

Cap. Value vs. Rate voltage, product diameter & type

Photo:

T.C	PH (CLASS Ⅰ, Temperature:-25℃~+85℃, T.C.C.: -150±60ppm)										SH(CLASS Ⅰ, Temperature:-25℃ ~+85℃, T.C.C.: -330±60ppm)		
Rate voltage	50V & 100V						500V				50V & 100V		
Dφ(Code)	050	060	070	080	100	120	050	060	080	100	050	060	070
D max. (mm)	5.5	6.5	7.5	8.5	10.5	12.5	5.5	6.5	9.0	11.0	5.5	6.5	7.5
T max. (mm)	3.5	3.5	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0	3.5	3.5	3.5
0.5													
1							010						
2													
3													
4	040										040		
5													
6													
7													
8													
10													
12													
15													
18							180						
20								200					
22													
25													
27													
30													
33								330			330		
36									360			360	
39													
47	470												
51		510											
56									560				
62													
68										680		680	
75		750											750
82			820							820			
100			101										101
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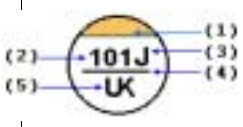
Packing	T or B					B	T or B						
Coating	PHENO												

Marking



1. Temperature characteristic	2. Nominal capacitance	3. Capacitance tolerance		4. Rated voltage		5. Manufacturer's identification
Recognized by color presented on the top of product: 1.PH: by orange color ~~2.~~SH: by green color	Identified by 3-figure code. Ex. 5pF→"5" 100 pF→"101"	±5%	J	50V	Marked as underline	Shall be marked as "UK", but Dφ=6.0 mm and less in Dia shall be omitted.
		±0.25pF	C	500V	No marking (is space.)	
		±0.5pF	D	1000V	Marked "1kV"	
				2000V	Marked "2kV"	

6.

HOW TO ORDER CEAMIC DISC CAPACITOR

TO ORDER, PLEASE SPECIFY PAN OVERSEAS PART NO. AS THE FOLLOWING EXAMPLE：

CH	500	101	J	070	B	20	C	7	B
DIELECTRIC CODE	VOLTAGE CODE	CAPACITANCE CODE	TOLERANCE CODE	DIAMETER CODE	KINK	LENGTH OR BAGGAGE	LENGTH TOLERANCE	PITCH	POWDER

Reference
7.Kinked
Lead Type

(CLASS Ⅰ)

T.C.(ppm/°C)	CODE
CH(0 ± 60)	CH
SL (+350 -1200)	S L
PH (-150 ± 60)	PH
RH (-220 ± 60)	RH
SH (-330 ± 60)	SH
TH (-470 ± 60)	TH
UJ (-750 ± 120)	UJ

(CLASS Ⅱ)

T.C.(△C%)	CODE
Y5E (±4.7%)	YE
Y5P (±10%)	YP
X7R (±15%)	XR
Z5U (+22 -56%)	ZU
Z5V (+22 -82%)	ZV

(CLASS Ⅲ)

T.C.(△C%)	CODE
Y5V(+22 -82%)	YV
Y5T(+22 -33%)	YT
Y5R(±15%)	RY

WV	CODE
16 VDC	160
25 VDC	250
50 VDC	500
100 VDC	101
500 VDC	501
1K VDC	102
2K VDC	202
3K VDC	302

CAPACITANCE	CODE
0.5 PF	0R5
1 PF	010
10 PF	100
4700 PF	472
0.01uF	103
0.1uF	104

TOLERANCE	CODE
±0.25 PF	C
± 0.50 PF	D
± 5 %	J
± 10 %	K
± 20 %	M
+80 - 20 %	Z
0 +100 %	P

DIAMETER	CODE
4 mm	040
5 mm	050
6 mm	060
10 mm	100
12 mm	120
15 mm	150

Tapping

COD	Baggage & Pitch
TN	Reel & Pitch12.7mm
AN	Box & Pitch12.7mm

Bulk

CODE	Length
4E	4.5mm
05	5.0mm
07	7.0mm
20	20mm
25	25mm

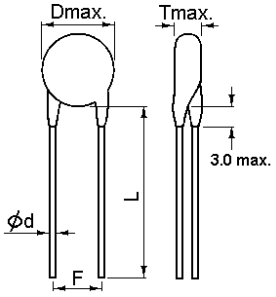
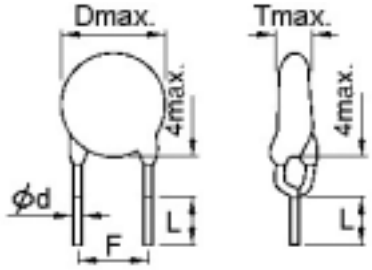
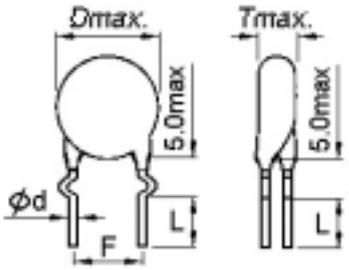
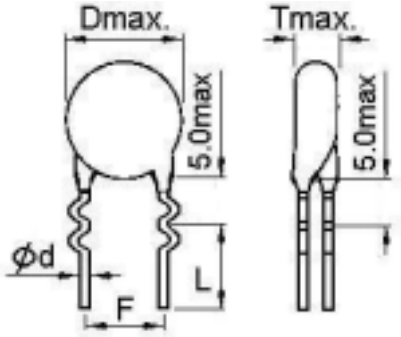
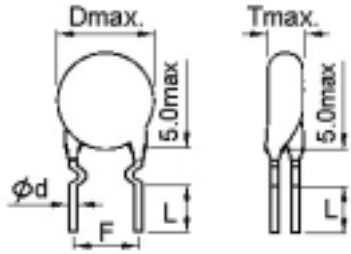
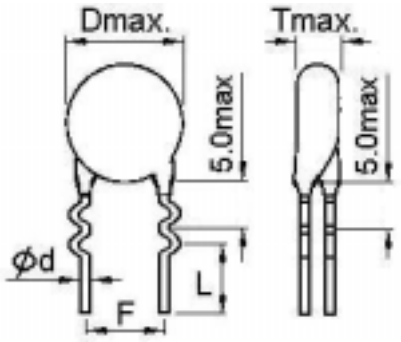
CODE	Length tolerance
A	± 0.5 mm
B	± 1 mm
C	Min.
D	Tapping & special purpose

CODE	Length pith
2	2.5±0.8mm
5	5.0±0.8㎜(含±1)
5	$5.0^{+0.8}_{-0.2}$ ㎜
7	7.5±1mm

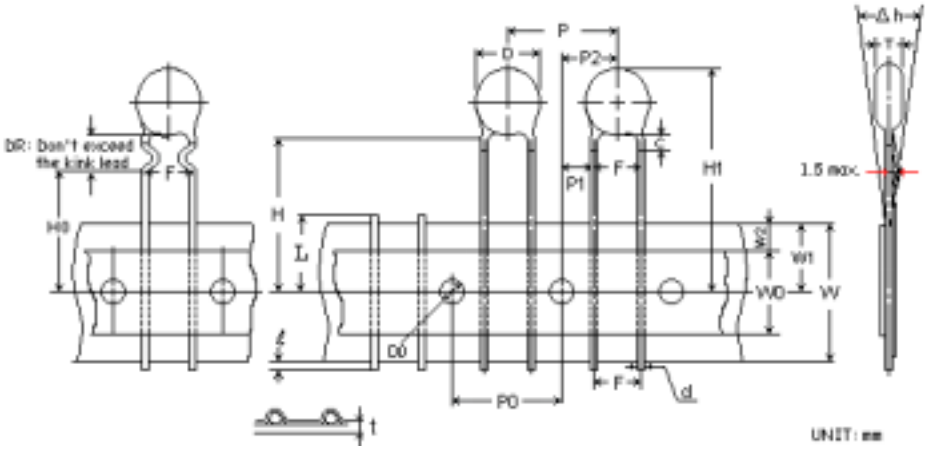
CODE	Coating
C	Phenolic 塗料
P	Phenolic 塗料→Pb free
A	Epoxy 塗料
B	Epoxy 塗料→Pb free

7. Kinked Lead Type

7-1.Disc size and lead style：(unit：mm)

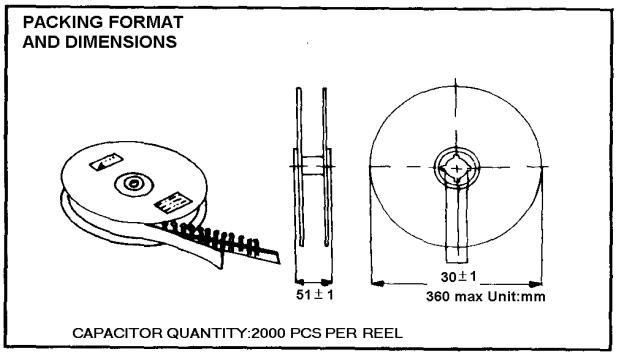
Lead type	Lead Code	Lead configuration	Lead type	Lead Code	Lead configuration
Type 1 Straight lead	B	lead style：B 	Type 4 Vertical kink short lead	D	lead style：D 
Type 2 Outside kink lead	X	lead style：X 	Type 5 Double outside kink lead (GZ USE)	M	lead style：M 
Type 3 Inside kink lead	H	lead style：H 	Type 6 Double outside kink lead (KS USE)	Z	lead style：Z 

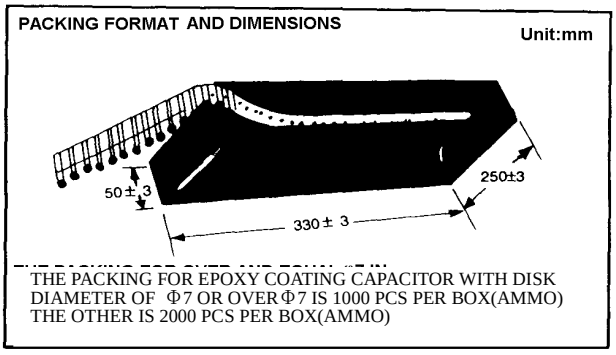
TAPING SPECIFICATIONS



Item		Symbol	Specification		Remarks
			Value	Tolerance	
Body diameter		D	*	max.	See Cap. Value vs. Rate voltage, product diameter & marking list.
Body thickness		T	*	max.	
Lead-wire diameter		d	0.6	+0.06,-0.05	
Pitch of component		P	12.7	±1.0	
Food hole pitch		P0	12.7	±0.3	Cumulative pitch erroe:1.0mm/20 pitch
Food hole center to lead		P1	3.85	±0.7	To be measured at bottom of clinch
Hole center to component center		P2	6.35	±1.3	
Lead-to-lead distance		F	5.0	+0.8,-0.2	
Component alignment, F-R		△h	0	±2.0	
Tape width		W	18.0	+1.0,-0.5	
Hole-down tape width		W0	11.0	min.	
Hole position		W1	9.0	+0.75,-0.5	
Hole-down tape position		W2	3.0	max.	
Height of component form tape center	For straight lead type	H	20.0	+1.0 -0.5	
	For kinked lead type	H0	16.0	±0.5	
Component height		H1	32.25	max.	
Lead-wire protrusion		ℓ	2.0	max.	
Food hole diameter		D0	4.0	±0.3	
Total tape thickness		t	0.7	±0.2	Ground paper:0.5±0.1mm
Length of sniped lead		L	11.0	max.	
Coating rundown on leads	For straight lead type	C	1.5	max.	
	For kinked lead type	DR	Don't exceed the kink lead		

These radial taped ceramic disc capacitors are designed especially for automatic insertion.
The available types for radial typed are diameters 11.0 mm and under.





STRAIGHT LEAD TYPE AS WELL AS CONFIGURATIONS MEETS THE
SPECIFICATION OF UNIVERSAL OR PANASERT ALSO AVAILABLE

8.Packaging ：

8-1.Pakaging Styles

Bulk：1000pcs/bag

Taping：2000pcs/box

9.Pb free showing：

The mark is showing to all label。

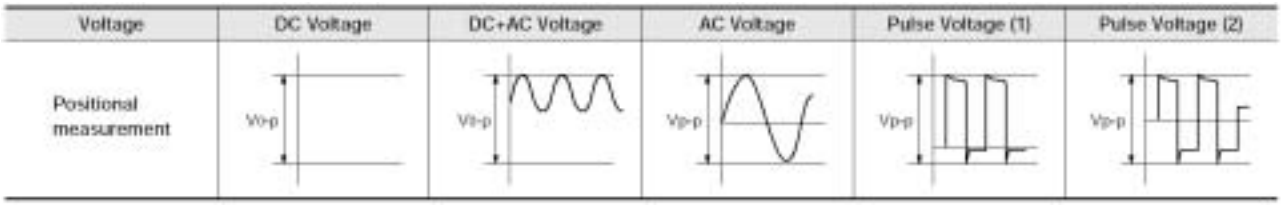
■ Caution

1.Caution(Rating)

I. Operating Voltage

When DC-rated capacitors are to be used in AC or ripple current circuits, be sure to maintain the Vp-p value of the applied voltage or the Vo-p which contains DC bias within the rated voltage range.

When the voltage is applied to the circuit, starting or stopping may generate irregular voltage for a transit period because of resonance or switching. Be sure to use a capacitor with a rated voltage range that includes these irregular voltages.



II. Operating Temperature and Self-generated Heat

Keep the surface temperature of a capacitor below the upper limit of its rated operating temperature range. Be sure to take into account the heat generated by the capacitor itself. When the capacitor is used in a high frequency current, pulse current or similar current, it may self-generate heat due to dielectric loss. The frequency of the applied sine wave voltage should be less than 300kHz. The applied voltage load (*) should be such that the capacitor's self-generated heat is within 20°C at an atmosphere temperature of 25°C. When measuring, use a thermocouple of small thermal capacity-K of ø0.1mm in conditions where the capacitor is not affected by radiant heat from other components or surrounding ambient fluctuations.

Excessive heat may lead to deterioration of the capacitor's characteristics and reliability. (Never attempt to perform measurement with the cooling fan running. Otherwise, accurate measurement cannot be ensured.)

III. Fail-Safe

When capacitor is broken, failure may result in a short circuit. Be sure to provide an appropriate fail-safe function like a fuse on your product if failure would follow an electric shock, fire or fume.

2.Caution (Storage and operating condition)

I. Operating and storage environment

The insulating coating of capacitors does not form a perfect seal; therefore, do not use or store capacitors in a corrosive atmosphere, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are present. And avoid exposure to

moisture. Before cleaning, bonding or molding this product, verify that these processes do not affect product quality by testing the performance of a cleaned, bonded or molded product in the intended equipment. Store the capacitors where the temperature and relative humidity do not exceed –10 to 40 degrees centigrade and 15 to 85 %.

Use capacitors within 6 months.

FAILURE TO FOLLOW THE ABOVE CAUTIONS MAY RESULT, WORST CASE, IN A SHORT CIRCUIT AND CAUSE FUMING OR PARTIAL DISPERSION WHEN THE PRODUCT IS USED.

3.Caution (Soldering and Mounting)

I. Vibration and impact

Do not expose a capacitor or its leads to excessive shock or vibration during use.

II. Soldering

When soldering this product to a PCB/PWB, do not exceed the solder heat resistance specification of the capacitor. Subjecting this product to excessive heating could melt the internal junction solder and may result in thermal shocks that can crack the ceramic element. When soldering capacitor with a soldering iron, it should be performed in following conditions.

Temperature of iron-tip: 400 degrees C. max.

Soldering iron wattage : 50W max.

Soldering time : 3.5 sec. max.

FAILURE TO FOLLOW THE ABOVE CAUTIONS MAY RESULT, WORST CASE, IN A SHORT CIRCUIT AND CAUSE FUMING OR PARTIAL DISPERSION WHEN THE PRODUCT IS USED.

4. Caution (Handling)

Vibration and impact

Do not expose a capacitor or its leads to excessive shock or vibration during use.

FAILURE TO FOLLOW THE ABOVE CAUTIONS MAY RESULT, WORST CASE, IN A SHORT CIRCUIT AND CAUSE FUMING OR PARTIAL DISPERSION WHEN THE PRDUCT IS USED.

■ Notice

1.Notice (Soldering and Mounting)

Cleaning (ultrasonic cleaning)

To perform ultrasonic cleaning, observe the following conditions.

Rinse bath capacity : Output of 20 watts per liter or less.

Rinsing time : 5 min. maximum.

Do not vibrate the PCB/PWB directly.

Excessive ultrasonic cleaning may lead to fatigue destruction of the lead wires.

2.Notice (Rating)

Capacitance change of capacitor

I. Class 1 series (Temp. Char. SL、CH)

Capacitance might change a little depending on the surrounding temperature or an applied voltage.

Please contact us if you intend to use this product in a strict time constant circuit.

Appendix 1.

CH	U	5	100	J	H	A
DIELECTRIC CODE	VOLTAGE CODE	DIAMETER CODE	CAPACITANCE CODE	TOLERANCE CODE	LEAD CODE	OTHER CODE

(CLASS Ⅰ)

T.C.(ppm/℃)	CODE
CH(0 ±60)	CH
SL(+350~-1200)	SL
PH(-150 ±60)	PH
RH(-220 ±60)	RH
SH(-330 ±60)	SH
TH(-470 ±60)	TH
UJ(-750 ±120)	UJ

W.V	CODE
16 VDC	B
25 VDC	T
50 VDC	U
100 VDC	A
500 VDC	C
1 KVDC	M
2 KVDC	M2
3 KVDC	M3

CAPACITANCE	CODE
0.5 PF	0R5
1 PF	010
10 PF	100
100 PF	101
1000 PF	102
4700 PF	472
0.01 μF	103
0.10 μF	104

COATING	CODE
EPOXY (BULE)	A
PHENOL (ORANGE)	------

(CALSS Ⅱ)

T.C. (△C%)	CODE
Y5E(±4.7%)	A
Y5P(±10%)	B
X7R(±15%)	X
Z5U(+22 -56%)	E
Z5V(+22 -82%)	F

DIAMETER	CODE
4 mm	4
5 mm	5
6 mm	6
7 mm	7
8 mm	8
9 mm	9
10 mm	0
11 mm	A
12 mm	B
13 mm	C
14 mm	D
15 mm	E

TOLERANCE	CODE
± 0.25 pF	C
± 0.50 pF	D
± 5 %	J
± 10 %	K
± 20 %	M
-20~+80%	Z
0~+100%	P

(CLASSIII)

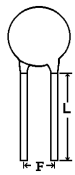
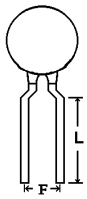
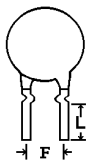
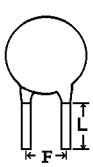
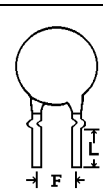
T.C. (△C%)	CODE
Y5V (+22~-82%)	FY
Y5T (+22~-33%)	D
Y5R (±15%)	RY

ITEM	STANDARD LEAD CODE			
	CODE NO.	LEAD CONF.	LEAD LENGTH (mm)	PITCH F (mm)
BULK	1	S	5 ± 1	2.5 ± 0.8
	2	S	5 ± 1	5.0 ± 0.8
	A	S	5 ± 1	10 ± 1.0
	3	S	7 ± 1	2.5 ± 0.8
	4	S	7 ± 1	5.0 ± 0.8
	5	L	20 MIN.	2.5 ± 0.8
	6	L	20 MIN.	5.0 ± 0.8
	7	L	20 MIN.	6.4 ± 1.0
	C	L	20 MIN.	10 ± 1.0
	8	H	5 ± 1	5.0 ± 0.8
	B	H	5 ± 1	10 ± 1.0
	0	H	7 ± 1	5.0 ± 0.8
	9	H	20 MIN.	5.0 ± 0.8
TAP. REEL	K	L	TAPING SPEC.	2.5 ± 0.8
	R	H		5.0 + 0.8
	L	L		- 0.2
TAP. AMMO	F	L	TAPING SPEC.	2.5 ± 0.8
	G	L		5.0 + 0.8
	H	H		- 0.2
	G1	L1		

ITEM	SPECIAL LEAD CODE			
	CODE NO.	LEAD CONF.	LEAD LENGTH (mm)	PITCH F (mm)
BULK	P2	S	18 ± 1	2.5 ± 0.8
	P3	S	15 ± 1	2.5 ± 0.8
	P8	S	10 ± 1	5.0 ± 0.8
	P14	S	5 ± 1	6.4 ± 1.0
	P16	S	5 ± 1	7.5 ± 1.0
	T2	H	15 ± 1	5.0 ± 0.8
	T3	H	5 ± 1	7.5 ± 1.0
	T4	H	20 MIN.	10 ± 1.0
	W4	L	20 MIN.	7.5 ± 1.0
	X2	X	5 ± 1	7.5 ± 1.0
	X3	X	5 ± 1	10 ± 1.0

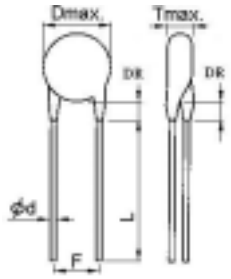
CUSTOMER SPECIFICATION

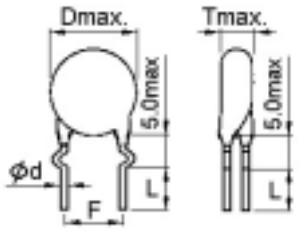
ANY POSSIBLE PHYSICAL CONFIGURATION CAN BE SPECIFIED, PAN OVERSEAS WILLBUILD THE PARTS TO MEET YOUR REQUIREMENTS

LEAD CONFIGURATION	
L	
L1	
H	
S	
X	

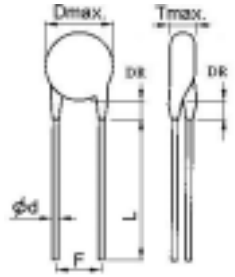
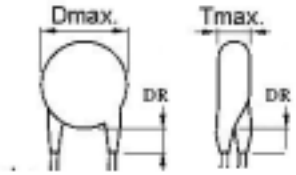
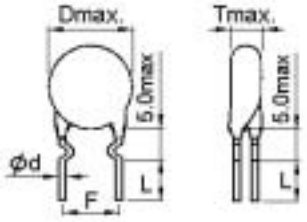
Appendix 2.

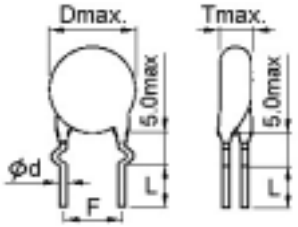
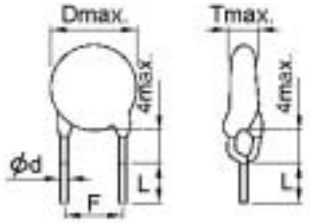
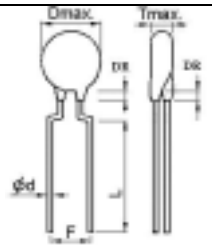
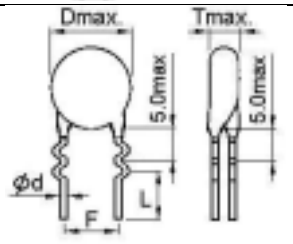
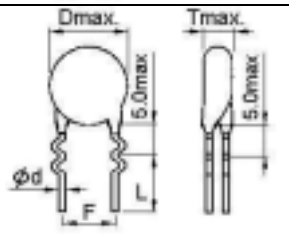
***Lead Style (Phenolic Resin Coating)**(unit: mm)

Lead type	Lead Code	Pith (F)	Lead Length (L)	Packing	Lead Configuration
Lead style：L Type L Straight long lead	5	2.5 ± 0.8	20 MIN.	Bulk	
	6	5.0 ± 0.8	20 MIN.		
	7	6.4 ± 1.0	20 MIN.		
	C	10 ± 1.0	20 MIN.		
	W4	7.5 ± 1.0	20 MIN.		
	K	2.5 ± 0.8	Taping SPEC.	Tap. Reel	
	L	$5.0^{+0.8}_{-0.2}$			
	F	2.5 ± 0.8		Tap. Ammo	
	G	$5.0^{+0.8}_{-0.2}$			
	1	2.5 ± 0.8	5.0 ± 1.0		
	2	5.0 ± 0.8	5.0 ± 1.0		
	A	10 ± 1.0	5.0 ± 1.0		
	3	2.5 ± 0.8	7.0 ± 1.0		
	4	5.0 ± 0.8	7.0 ± 1.0		
	P2	2.5 ± 0.8	18.0 ± 1.0		
	P3	2.5 ± 0.8	15.0 ± 1.0		
	S1	5.0 ± 0.8	3.5 ± 0.5		
	S2	7.5 ± 1.0	3.5 ± 0.5		
	S3	10 ± 1.0	7.5 ± 1.7.5	±	

Lead type	Lead Code	Pith (F)	Lead Length (L)	Packing	Lead Configuration
Lead style：X Type X Outside kink lead	X2	7.5 ± 1.0	5.0 ± 1.0	Bulk	
	X3	10 ± 1.0	5.0 ± 1.0		
	X5	7.5 ± 1.0	4.0 ± 0.5		
	X7	7.5 ± 1.0	4.0 ± 0.5		
	X0	10 ± 1.0	4.0 ± 0.5		
	Q1	5.0 ± 0.8	3.5 ± 0.5		
	Q2	7.5 ± 1.0	3.5 ± 0.5		
	Q3	10 ± 1.0	3.5 ± 0.5		
	Q5	5.0±0.8	$5.0^{+0.5}_{-1.0}$		
	Q7	7.5±1.0	$5.0^{+0.5}_{-1.0}$		
	Q0	10±1.0	$5.0^{+0.5}_{-1.0}$		
	X	7.5 ± 1.0	Taping SPEC.	Tap. Ammo	
	X1	$5.0^{+0.8}_{-0.2}$			
Lead style：D	D5	5.0 ± 1.0	4.0 ± 0.5	Bulk	
	D7	7.5 ± 1.0	4.0 ± 0.5		
	D0	10 ± 1.0	4.0 ± 0.5		
	D1	5.0 ± 0.8	3.5 ± 0.5		
	D2	7.5 ± 1.0	3.5 ± 0.5		
	D3	10 ± 1.0	3.5 ± 0.5		

***Lead Style (Epoxy Resin Coating)(unit: mm)**

Lead type	Lead Code	Pith (F)	Lead Length (L)	Packing	Lead Configuration
Lead style：L Type L Straight long lead	6A	5.0 ± 0.8	20 MIN.	Bulk	
	CA	10 ± 1.0	20 MIN.		
	W4A	7.5 ± 1.0	20 MIN.		
	L5	5.0 ± 0.8	20 MIN.		
	L7	7.5 ± 1.0	20 MIN.		
	L0	10 ± 1.0	20 MIN.		
	LA	$5.0^{+0.8}_{-0.2}$	Taping SPEC.	Tap. Reel	
	GA	$5.0^{+0.8}_{-0.2}$		Tap. Ammo	
	L7F	7.5 ± 1.0			
	L0T	10 ± 1.0			
Lead style：S Type S Straight short lead	2A	5.0 ± 0.8	5.0 ± 1.0	Bulk	
	AA	10 ± 1.0	5.0 ± 1.0		
	4A	5.0 ± 0.8	7.0 ± 1.0		
	P8A	5.0 ± 0.8	10.0 ± 1.0		
	P16A	7.5 ± 1.0	5.0 ± 1.0		
	S7, A7, L7A	7.5 ± 1.0	4.5 ± 1.0		
	S7S	7.5 ± 1.0	2.5 ± 0.5		
	S7A	7.5 ± 1.0	3.0 ± 1.0		
	S7W	7.5 ± 1.0	8.0 ± 0.5		
	S7P	7.5 ± 1.0	10.0 ± 1.0		
	S0, A0, L0A	10 ± 1.0	4.5 ± 1.0		
	S0S	10 ± 1.0	2.5 ± 0.5		
	S0A	10 ± 1.0	3.0 ± 1.0		
	S0W	10 ± 1.0	8.0 ± 0.5		
	S0P	10 ± 1.0	10.0 ± 1.0		
	S1A	5.0 ± 0.8	3.5 ± 0.5		
	S2A	7.5 ± 1.0	3.5 ± 0.5		
	S3A	10 ± 1.0	3.5 ± 0.5		
	A1A	5.0 ± 0.8	3.0 ± 0.5		
	A2A	7.5 ± 1.0	3.0 ± 0.5		
	A3A	10 ± 1.0	3.0 ± 0.5		
	P5A	5.0 ± 0.8	4.0 ± 0.5		
	P7A	7.5 ± 1.0	4.0 ± 0.5		
	P0A	10 ± 1.0	4.0 ± 0.5		
	A5A	5.0 ± 0.8	4.5 ± 1.0		
	A7A	7.5 ± 1.0	4.5 ± 1.0		
	A0A	10 ± 1.0	4.5 ± 1.0		
Lead style：H or B Type H or B Inside kink lead	8A	5.0 ± 0.8	5.0 ± 1.0	Bulk	
	BA	10 ± 1.0	5.0 ± 1.0		
	9A	5.0 ± 0.8	20 MIN.		
	0A	5.0 ± 0.8	7.0 ± 1.0		
	T2A	5.0 ± 0.8	15.0 ± 1.0		
	T3A	7.5 ± 1.0	5.0 ± 1.0		
	T4A	10 ± 1.0	20 MIN.		
	B5A	5.0 ± 0.8	4.0 ± 0.5		
	B7, B7A	7.5 ± 1.0	4.0 ± 0.5		
	B0, B0A	10 ± 1.0	4.0 ± 0.5		
	H1A	5.0 ± 0.8	3.5 ± 0.5		
	H2A	7.5 ± 1.0	3.5 ± 0.5		
	H3A	10 ± 1.0	3.5 ± 0.5		
	H5A	5.0 ± 0.8	4.5 ± 1.0		
	H7A	7.5 ± 1.0	4.5 ± 1.0		
	H0A	10 ± 1.0	4.5 ± 1.0		
	E5A	5.0±0.8	$5.0^{+0.5}_{-1.0}$		
	E7A	7.5±1.0	$5.0^{+0.5}_{-1.0}$		
	E0A	10±1.0	$5.0^{+0.5}_{-1.0}$		
	RA	$5.0^{+0.8}_{-0.2}$	Taping SPEC.	Tap. Reel	
	HA	$5.0^{+0.8}_{-0.2}$		Tap. Ammo	

Lead type	Lead Code	Pith (F)	Lead Length (L)	Packing	Lead Configuration
Lead style：X Type X Outside kink lead	X2A	7.5 ± 1.0	5.0 ± 1.0	Bulk	
	X3A	10 ± 1.0	5.0 ± 1.0		
	X7, X7A	7.5 ± 1.0	4.0 ± 0.5		
	X0, X0A	10 ± 1.0	4.0 ± 0.5		
	Q1A	5.0 ± 0.8	3.5 ± 0.5		
	Q2A	7.5 ± 1.0	3.5 ± 0.5		
	Q3A	10 ± 1.0	3.5 ± 0.5		
	Q5A	5.0±0.8	$5.0^{+0.5}_{-1.0}$		
	Q7A	7.5±1.0	$5.0^{+0.5}_{-1.0}$		
	Q0A	10±1.0	$5.0^{+0.5}_{-1.0}$		
	XA	7.5 ± 1.0	Taping SPEC.	Tap. Ammo	
	X1A	$5.0^{+0.8}_{-0.2}$			
	X7F	7.5 ± 1.0			
	X0T	10 ± 1.0			
Lead style：D Type D Vertical kink short lead	D7, D7A	7.5 ± 1.0	4.0 ± 0.5	Bulk	
	D0, D0A	10 ± 1.0	4.0 ± 0.5		
	D1A	5.0 ± 0.8	3.5 ± 0.5		
	D2A	7.5 ± 1.0	3.5 ± 0.5		
	D3A	10 ± 1.0	3.5 ± 0.5		
	DA	$5.0^{+0.8}_{-0.2}$	Taping SPEC.	Tap. Ammo	
	D7F	7.5 ± 1.0			
	D0T	10 ± 1.0			
Lead style：L1 Type L1 Straight long lead (1)	G2A	5.0 ± 0.8	20 MIN.	Bulk	
	G1A	$5.0^{+0.8}_{-0.2}$	Taping SPEC.	Tap. Ammo	
Lead style：Z Type Z Double outside kink lead (1)	Z1A	5.0 ± 0.8	5.0 ± 1.0	Bulk	
	Z2A	7.5 ± 1.0	5.0 ± 1.0		
	Z3A	10 ± 1.0	5.0 ± 1.0		
Lead style：XX Type XX Double outside kink lead (2)	X6A	5.0 ± 0.8	5.0 ± 1.0	Bulk	
	X4A	7.5 ± 1.0	5.0 ± 1.0		
	X5A	10 ± 1.0	5.0 ± 1.0		